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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.   | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 10/786,038  | 02/26/2004  | Oh-Nam Kwon          | 8733.1014.00-US       | 2919             |
| 30827 7590 12/26/2006<br>MCKENNA LONG & ALDRIDGE LLP<br>1900 K STREET, NW<br>WASHINGTON, DC 20006 |             |                      | EXAMINER<br>VU, DAVID |                  |
|   |             |                      | ART UNIT              | PAPER NUMBER     |
|   |             |                      | 2818                  |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE  |             | MAIL DATE            | DELIVERY MODE         |                  |
| 3 MONTHS  |             | 12/26/2006           | PAPER                 |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/786,038

Applicant(s)

KWON, OH-NAM

Examiner

DAVID VU

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-16 are rejected under 35 U. S. C. 102(e) as being anticipated by Tokuhiko et al. (US Pat. 6,548,831, hereinafter Tokuhiko).

Tokuhiko in figs. 1(b)-5(c) disclose a method of manufacturing a liquid crystal display device including a Mo/Cu electro line, comprising: forming a gate line 5 and a gate electrode 4, including: depositing a Mo/Cu layer on a substrate; forming a photoresist pattern on the gate line/gate electrode; etching the gate line/gate electrode Mo/Cu layer using either dry etching (plasma etching) (col. 4, lines 35-65) or wet-etching etchant to form a Mo/Cu electro line, wherein the photoresist pattern is used as a patterning mask; and removing Mo residue around the Mo/Cu electro line (fig. 1b); forming a gate insulating layer 6 on the gate line 5 and the gate electrode 4 (fig. 2 and col. 5, lines 5-10); forming a semiconductor layer 8 on the gate insulating layer 6 over the gate electrode 4 (col. 5, lines 17-21); forming a data line/a source/drain electrode 14 on the semiconductor layer 8 (col. 5, lines 45-49); forming a

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passivation layer on the data line, the source electrode and the drain electrode; and forming a pixel electrode (ITO) on the passivation layer (col. 6, lines 2-9). Note that, the wet etch using an etchant such as DI water, HF, HNO<sub>3</sub>, aqueous solution containing water with hydrogen peroxide or the dry etch (plasma/ashing process) using oxygen radicals/ozone is well known in the art {see **Rissman** (US Pat. 6,986,972) (col. 8; lines 37-52) for evidence of the state of the art in which wet etching was carried out in an aqueous solution of diluted hydrofluoric acid (HF:DI); or **Jo et al.** (U.S. Pat. 6,780,784) teaches the H<sub>2</sub>O<sub>2</sub> wet etchant can be used (col. 3; lines 28-53)}. Since the Mo residue is exposed to the wet/dry treatment, MoO<sub>3</sub> is formed. Therefore, removing the Mo residue around the Mo/Cu electro line includes oxidizing the Mo residue and removing the oxidized Mo residue {see **Jo et al.** (U.S. Pat. 6,780,784) (col. 5, line 52 through col. 6, line. 3)}.

### *Response to Arguments*

2. Applicant's arguments filed 10/02/06 have been fully considered but they are not persuasive.
3. Applicant argues that Tokuhiro's process is not anticipatory as it does not teach the structure and order of metal layers and resist recited in claims 1 and 8. However, this argument is not persuasive. Tokuhiro teaches in col. 4, lines 35-37 the gate line 5 include one or more layers MoW, Cu, Cr, Ni, Al, Mo, Ag and the like (i.e., including a double-layered structure Mo/Cu or Cu/Mo) and then the photoresist is formed on the gate line 5 (col. 4, lines 46-52). Therefore, Tokuhiro, as indicated in the above rejection, clearly discloses claimed features (i.e., Mo/Cu/photoresist mask structure). Moreover, the process of forming a gate line by depositing

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the conductive material/metal layers on an entire surface of a substrate and patterned by a photolithography method is well-known in the art {see **Song et al.** (U.S. Pat 6,781,651); col. 5, lines 51-59}.

### **Conclusion**

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Vu whose telephone number is (571) 272-1798. The examiner can normally be reached on Monday-Friday from 8:00am to 5:00pm. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith S can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



DAVID VU  
PRIMARY EXAMINER